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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

VO, NGUYEN THANH

ART UNIT PAPER NUMBER

2618

DATE MAILED: 05/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,425

Applicant(s)

KERTH, DONALD A.

Examiner

Nguyen T. Vo

Art Unit

2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 27-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 13-16 is/are rejected.
- 7) ☒ Claim(s) 3-12 and 17-26 is/are objected to.
- 8) ☒ Claim(s) 1-40 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species: **Specie I**, including **claims 1-26**, related to embodiment of figure 1; **Specie II**, including **claims 27-40**, related to embodiment of figure 2. The species are independent or distinct because the embodiment of figure 1 is independent or distinct with respect to the embodiment of figure 2. More specifically, the embodiment of figure 1 *adjusts a complex sine wave within a down converter*, while the embodiment of figure 2 *alternatively swaps signal paths of in-phase IF signal and quadrature IF signal*.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there is no generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species.

MPEP § 809.02(a).

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2. During a telephone conversation with Mr. Antony P. Ng on 05/08/2006 a provisional election was made with traverse to prosecute the invention of Specie I, claims 1-26. Affirmation of this election must be made by applicant in replying to this Office action. Claims 27-40 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Objections

3. Claim 9 is objected to because of the following informalities: there are two claims 9 in the present application; **the first claim 9 should be renumbered as claim 8.**

Appropriate correction is required.

For the purpose of the examination, the first claim 9 is treated in this action as if it were claim 8.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Stikvoort (US 2004/0125240 A1, cited by examiner).

As to claims 1, 15, Stikvoort discloses in figure 1 a radio frequency (RF) receiver comprising a local oscillator (LO) 8 for generating a local oscillation signal; first and a second mixers (see the two mixers 5) coupled to said LO, for converting a received RF signal to an in-phase intermediate frequency (IF) signal and a quadrature IF signal, respectively (see the I and Q signals from mixers 5); an LO frequency control module 3, coupled to said LO, for alternately down-converting a channel frequency by changing an oscillation frequency of said LO; a down converter 13, coupled to said first and second mixers, for down converting said in-phase IF signal and said quadrature IF signal to a baseband; and a down conversion controller (see the control signal 7; see also paragraph [0016]), coupled to said down converter, for adjusting a complex sine wave within said down converter (see paragraph [0016]). Stikvoort thus discloses all the claimed limitations.

As to claim 13, Stikvoort discloses an IF filter 15.

As to claim 14, Stikvoort discloses an analog-to-digital converter (see paragraph [0017]).

6. Claims 1-2, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Isaksson (5,812,523, cited by examiner).

As to claims 1, 15, Isaksson discloses in figure 1 a radio frequency (RF) receiver comprising a local oscillator (see the legend "frequency control of **LO** at the down converter" in figure 1) for generating a local oscillation signal; first and a second mixers (see the legend "frequency control of **LO** at the **down converter**"; in this case the down converter would inherently include two mixers as claimed because it is a quadrature

down converter) coupled to said LO, for converting a received RF signal to an in-phase intermediate frequency (IF) signal and a quadrature IF signal, respectively (see the I and Q signals); an LO frequency control module (see the legend “**frequency control of LO at the down converter**”), coupled to said LO, for alternately down-converting a channel frequency by changing an oscillation frequency of said LO; a down converter (see the complex multiplier), coupled to said first and second mixers, for down converting said in-phase IF signal and said quadrature IF signal to a baseband; and a down conversion controller (see the legend “frequency control signal”), coupled to said down converter, for adjusting a complex sine wave within said down converter (see column 5 lines 35-60). Isaksson thus discloses all the claimed limitations.

As to claims 2, 16, see column 5 lines 35-60.

As to claim 14, Isaksson discloses an analog-to-digital converter (see figure 1).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stikvoort in view of Fulghum (6,728,326, cited by examiner).

As to claims 2, 16, Stikvoort fails to disclose down-converting a channel frequency on a frame-by-frame basis. Fulghum discloses down-converting a channel frequency on a frame-by-frame basis (see column 4 lines 30-52; figure 2 showing

TDMA frames; figure 3A showing down-converting received signal at mixer 302).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Fulghum to Stikvoort, in order to synchronize the receiver with the slot timing of the transmitted signal in a TDMA system (as suggested by Fulghum at column 4 lines 48-51).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isaksson.

As to claim 13, Isaksson fails to disclose an IF filter as claimed. The examiner, however, takes Official Notice that such an IF filter is known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above conventional IF filter to the receiver of Isaksson, in order to improve the quality of the received signals.

Allowable Subject Matter

10. Claims 3-12, 17-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claims 3, 17, the applied references fail to disclose or render obvious the functions of the LO frequency control module as specified in the claims.

As to claim 8, the applied references fail to disclose or render obvious the functions of the LO frequency control module as specified in the claim.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Samueli (6,714,608); Iemura (6,483,883); Morie (US 2006/0088136 A1); Kerth (US 2005/0143040 A1) and Huang (5,872,480) all disclose adjusting a complex sine wave within a down converter.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T. Vo whose telephone number is (571) 272-7901. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nguyen Vo



5-9-2006

NGUYEN T. VO
PRIMARY EXAMINER